

Noise and Full Counting Statistics of Electronic Transport in Quantum Conductors

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First I would like to discuss general concepts in describing noise and Full Counting Statistics (FCS). I will discuss, what is measurable in noise and FCS. Then I will talk about recent development in the description of the Full Counting Statistics (FCS) for electrons in quantum conductor. We (see the list of co-authors after the title) study the full counting statistics for the transmission of two identical particles with positive or negative symmetry under exchange for the situation where the scattering depends on energy. We find that, besides the expected sensitivity of the noise and higher cumulants, the exchange symmetry has a huge effect on the average transmitted charge ; for equal-spin exchange-correlated electrons, the average transmitted charge can be orders of magnitude larger than the corresponding value for independent electrons. Also, we find that the probability of tunneling for two particles can considerably exceed the "classical answer" product of two probabilities for each particle. The biggest deviation from the classical answer is found in the case when the particles are entangled, when the noise can be super-Poissonian.